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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/577,952	09/01/2006	Makoto Ouchi	125977	5274

25944 7590 07/18/2008

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EXAMINER	
LISTVOYB, GREGORY	

ART UNIT	PAPER NUMBER
1796	

MAIL DATE	DELIVERY MODE
07/18/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/577,952	OUCHI ET AL.	
	Examiner	Art Unit	
	GREGORY LISTVOYB	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 April 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) *4-9 and 11-13* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of polylactic acid composition in the reply filed on 4/30/2008 is acknowledged. The traversal is on the ground(s) that the amended claims distinguish over the Mitsuru reference and, thus, share at least one corresponding special technical feature. This is not found persuasive because the amended claims are being obvious in view of Mitsuru. The obviousness analysis, which is necessitated by amendment, is presented below in the present Office Action.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3 and 10 rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsuru et al (JP 2003-073538, cited in IDS) herein Mitsuru in combination with Yosimura (US 2005/0001349) herein Yosimura (necessitated by amendment).

Mitsuru discloses a polylactic acid resin composition characterized by comprising a polylactic acid-lamellar clay mineral bonded body consisting of a lamellar clay mineral and one of poly-L-lactic acid and poly-D-lactic acid (see line 0052), which is bonded to the lamellar clay mineral with onium salt having a hydroxyl group (see Abstract). Mitsuru does not explicitly teach the poly-L-lactic acid and poly-D-lactic acid which is not bonded to the lamellar clay mineral.

However, several factors point out to a suggestion that polylactic acid exists in the composition in both bounded and unbounded forms:

1. Mitsuru teaches that polylactic acid can be bounded only with its end group (see line 0009). Since molecular weight of the polymer can vary in a very broad range (5000-1000000, see line 0016), subsequently dramatically change the concentration of reactive groups, it is expected that some of end groups remain unreacted;

2. Mitsuru discloses a broad concentration range of onium salt (see line 0023) and ratio between polylactic acid and onium salt (see line 0039), which in same cases leads to coexistence of bounded and unbounded forms of polylactic acid;

3. Mitsuru teaches that the distance between clay layers is more than 5 nm. This size (nm) is comparable with the size of the macromolecule. Therefore, some polylactic acid will not be able to penetrate between the layers to bind to the clay;

4. Mitsuru teaches two types of manufacturing processes (see line 0041). One of them comprises a procedure of mixing of onium-salt modified clay with polylactic acid. Second process discloses in situ synthesis of polylactic acid with the clay, meeting the limitations of Claim 10. At least for the first process the existence of both forms of polylactic acid is expected.

The position is taken that the coexistence of bounded and unbounded forms of polylactic acid is desirable, since it provide a better distribution of the resin between the clay layers. (Bounded polymer can prevent penetration new portion of polylactic acid inside the interlamellar space). In addition, free polylactic acid should decrease viscosity of the composition, which enhance its processability.

Therefore, it would have been obvious to a person of ordinary skills in the art to prepare a composition, where polylactic acid exists in both bounded and unbounded forms, since it creates more uniform structure and enhance processability of the composition.

Mitsuru teaches L-polylactic acid and D-polylactic acid and their mixtures (see line 0018).

However, Mitsuru does not specify optical purity of the lactic acid monomers and the ratio between L- and D- polylactic acids in the composition.

Yosimura teaches lactic acid polymer composition, which comprises L-lactic acid optical purity of 95% or more (see line 0085). Lactic acid based polymers of high optical purity is requires to obtain high melting point (which is derives from high degree of crystallinity).

Mitsuru teaches that high rigidity, which provides by highly crystallinic polymer is desirable in his application (see line 0071-0073).

Therefore, it would have been obvious to a person of ordinary skills in the art to use L-and D- polylactic acid of high optical purity in Mitsuru compositions in order to obtain a composition high crystallinity and thus, high rigidity.

Mitsuru does not teach exact ratio between L-and D- polylactic acids (PLLA and PDLA) in his composition.

However, it is known that PDLA and PLLA form a highly regular stereocomplex with increased crystallinity.

In addition, it is noted that the ratio of poly-L-lactic acid to said poly-D-lactic acid in the polylactic acid composition as claimed in amended Claim 1 is from 1:99 wt% to 99:1 wt%,i.e. covering virtually all possible range of the blend.

Therefore, Mitsuru's composition is expected to meet the above claim limitation.

In addition, it would have been obvious to a person of ordinary skills in the art to blend PLLA and PLLA in order to obtain a rigid material with high degree of crystallinity.

Response to Arguments

Applicant's arguments with respect to claims 1-3 and 10 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments drawn to amendments of the claims only. Claim examination can be found in the present Office Action.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GREGORY LISTVOYB whose telephone number is (571)272-6105. The examiner can normally be reached on 10am-7pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rabon Sergent/
Primary Examiner, Art Unit 1796

GL